A NOTE ON THE MEGALOPTERA, NEUROPTERA AND MECOPTERA OF TUGLO WILDLIFE REFUGE, NEW SOUTH WALES

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Abstract

Three species of Megaloptera, 32 species of Neuroptera and 2 species of Mecoptera are recorded from Tuglo Wildlife Refuge, Hunter Valley, New South Wales. Preliminary data are provided on adult flight periods based on collecting over several years and on one year of continuous use of a Malaise trap.

Introduction

Tuglo Wildlife Refuge (32°14'S 151°16'E) is a property of about 214 ha situated some 10 km south-west of Mt Royal and about 40 km due north of Singleton, New South Wales. Its altitude is from 760 m to 320 m and the area is of interest because of its intermediate position between Barrington Tops to the north and the Hunter Valley to the south. This paper gives an account of the Megaloptera, Neuroptera and Mecoptera found on the Refuge, collected as part of a wider flora and fauna survey of the area.

The environment

Most of the Refuge consists of an irregular, steep-sided ridge running more or less east-west, descending in a series of platforms to the western boundary formed by Falbrook, a tributary of Glennies Creek which, in turn, runs into the Hunter River. The northern slopes are affected by north-westerly winds, resulting in hot, dry conditions in summer and harsh conditions in winter; southerly winds provide a cooler influence in summer. The effects of these winds are reflected in the vegetation pattern with the northern slopes supporting dry sclerophyll and the sheltered southern slopes supporting rainforest and wet sclerophyll. There are also areas of eucalyptus woodland and grassland and a small area is undergoing horticultural development. Summer temperatures are high, frost occurs in winter and there are occasional light falls of snow.

Collection of data

Data were collected casually from the late 1970s, with more intensive collecting from 1986 and by continuous operation of a Malaise trap, near the rainforest in wet sclerophyll, from mid 1988 to mid 1989. Most of the individually collected specimens were obtained by beating. This undoubtedly introduces bias into the samples because small, active fliers, such as the Coniopterygidae, tend to take flight when disturbed whereas some of the Hemerobiidae will indulge in "death feigning" and lie immobile on the beating tray. Capture by Malaise trap may be less biased and give a better indication of flight activity but the combined data give areasonable indication of seasonal activity of adults. Several hundreds of specimens were taken; these will be deposited in the Australian Museum.

Table 1. List of species and seasonal occurrence of Megaloptera, Neuroptera and Mecoptera from Tuglo Wildlife Refuge

Week commencing

NEUROPTERA
CONIOPTERYGIDAE
Coniopteryx maculithorax Enderlein
Coniopteryx orientalis Meinander
Heteroconis ornata Enderlein
Neosemidalis (*Leucosemidalis*) *acuta* Meinander
Neosemidalis (*Leucosemidalis*) *farinosa* (Enderlein)
Neosemidalis (*Leucosemidalis*) *nervalis* Meinander
Neosemidalis spp. (females)
ITHONIIDAE
Megalithone tillyardi Riek
OSMYLIDAE
Oedosmylus latipennis Kimmins
MANTISPIDAE
Toolida infrequens Lambkin
Campion australasiae (Guerin)
Campion rubellus Navas
Theristria stigma (Esben-Petersen)
Spaminta minjerribae Lambkin
HEMEROBIIDAE
Psychobiella sordida Banks
Psectra nakahari New
Notherobius nebulosus New
Hemerobius australis Walker
Micromus tasmaniae (Walker)
Drepanacra binocula (Newman)

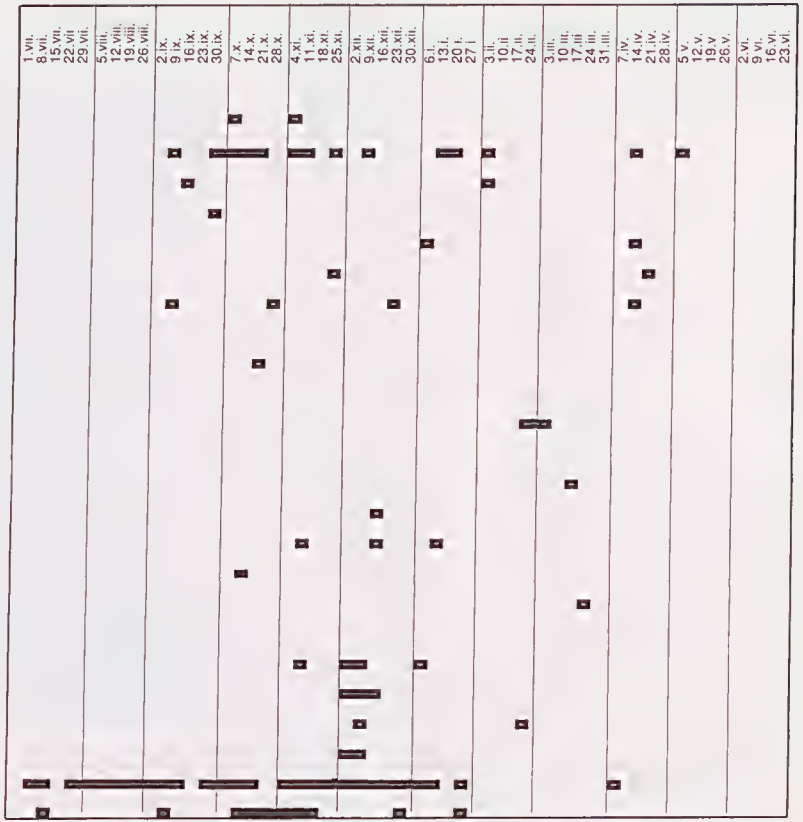


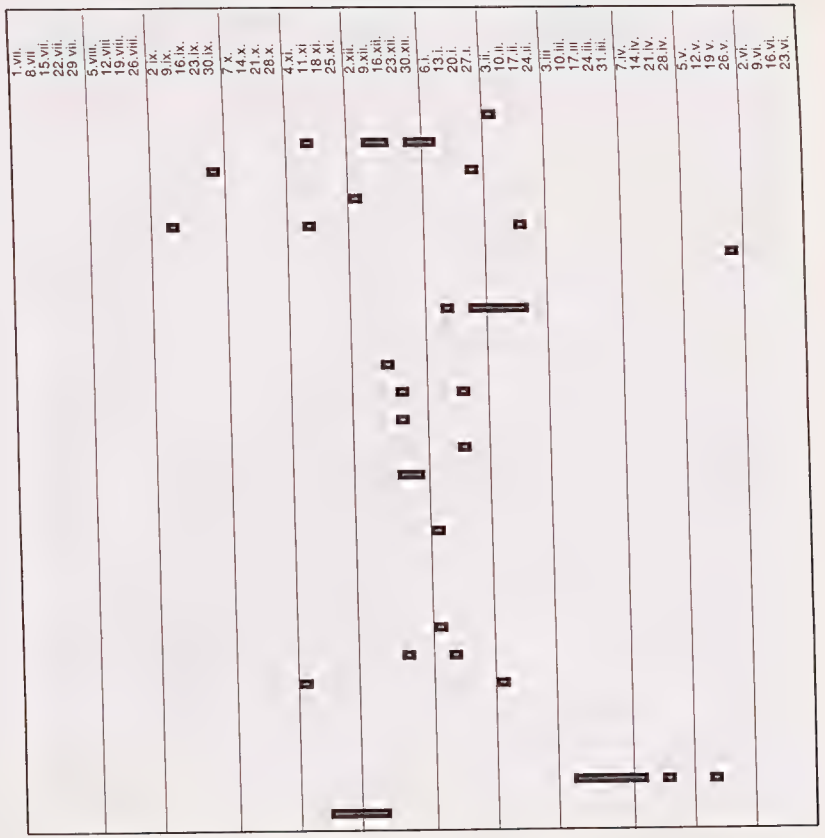
Table 1 (cont.)

Week commencing

CHRYSOPIDAE
Calochrysa extranea (Esben-Petersen)
Mallada signata (Schneider)
Mallada innotata (Walker)
Mallada tripunctata (McLachlan)
Plesiochrysa ramburi (Schneider)
Dictyochrysa peterseni Kimmins
NYMPHIDAE
Nymphes myrmeleonides Leach
MYRMELEONTIDAE
Myrmeleon acer Walker
Myrmeleon pictifrons Gerstaecker
Mossega reticulata Navas
?*Dendroleon dumigani* Tillyard
Glenoleon pulchellus (Rambur)
ASCALAPHIDAE
Suhpalacsa flavipes (Leach)

MEGALOPTERA
CORYDALIDAE
Protochauliodes biconicus Kimmins
Archichauliodes neoguttiferus Theischinger
Archichauliodes plomleyi Kimmins

MECOPTERA
CHORISTIDAE
Taeniochorista pallida Esben-Petersen.
BITTACIDAE
Harpobittacus limnaeus Smithers



Discussion

Although the principal aim of the collections was to establish which species are present on Tuglo Wildlife Refuge some information on periodicity of flight activity can be gleaned from the collection data.

Megaloptera

Only five specimens were collected. Two of the species were taken only once. All were taken between 5th November and 2nd February, the specimens of *A. plomleyi* a considerable distance from the nearest running water.

Neuroptera

Table 1 summarises data on collection of all material grouped by weeks.

These suggest that adult Neuroptera are most likely to been encountered from late September to end of February. The main exceptions are *Micromus tasmaniae* and *Drepanacra binocula* discussed below.

Coniopteryx orientalis and *Neosemidalis farinosa* accounted for 76% of the Coniopterygidae although the latter was collected on only two occasions and never appeared in the trap. Most *C. orientalis* specimens, the commonest coniopterygid, were taken in the trap.

Oedosmylus latipennis was taken only in two consecutive weeks in the trap suggesting that it may have a relatively short flight period.

Mantispids were not common and only one specimen (*Toolida infrequens*) was taken in the trap. All others were collected.

Most hemerobiids appear to have a fairly short adult flying season, mainly from November to January. *Drepanacra binocula* is most active from mid October to the end of January and was trapped and collected. This species hibernates as adults in dried leaves and this accounts for collection of adults by beating in July. *M. tasmaniae*, the most abundant and widespread Australian hemerobiid, has a much earlier flight season than other Neuroptera, appearing in the trap from mid July to mid January. Like *D. binocula* this species hibernates as adults and this probably accounts for the captures by beating in April and June.

Chrysopids were not abundant in the area and only two specimens were trapped, the others being collected.

The small numbers of nymphids, myrmeleontids and ascalaphids taken make comment unwarranted except to say that they appear to be active during the short period of hot weather from mid December to the end of January.

Relatively little information is available on the flight periods of Australian Neuroptera from specific localities. Mackey (1988) provides information on myrmeleontids at Rockhampton, Queensland. The revisionary papers of New (e.g. New 1980, 1981) provide useful collecting dates but these do not, of course, relate to individual localities over a period.

The data provided by the present general collection suggest that the active periods vary considerably from species to species and further emphasise the fact that our knowledge of the biology of these insects in Australia is very limited. Considering the potential importance of Neuroptera as predators of pest species detailed studies of their field biology should be given high priority. It is hoped that this short note will encourage others to make more detailed investigations.

Mecoptera

Only two species of Mecoptera were taken, one of which was trapped. *H. limnaeus* was collected from late November to early January and *T. pallida* collected and trapped only between mid March and mid April. Both species have a short adult flying period and are seasonally segregated.

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